AFANAS'YEV, G.D., otv. red.; BARANOV, V.I., prof., zam. otv. red.; SHCHERBAKOV, D.I., akademik, red.; POLKANOV, A.A., akademik red.[deceased]; STARIK, I.Ye., redaktor ; VINOGRADOV, A.P., akademik, red.; GERLING, E.K., prof., red.; PEKARSKAYA, T.B., kand. geol.-miner. nauk, red.; BORSUK, A.M., red.izd-va; SIMKINA, G.S., tekhn. red.

[Transactions of the 11th session of the Commission on the Determination of the Absolute Age of Geological Formations, May 12-27, 1963] Trudy odinnadtsatoi sessii...; 12-27 maia 1963 g. Moskva, Izd-vo AN SSSR, 1963. 390 p. (MIRA 17:4)

1. Akademiya nauk SSSR. Komissiya po opredeleniyu absolyutnogo vozrasta geologicheskikh formatsiy. 2. Chlen-korrespondent AN SSSR (for Afanas'yev, Starik).

VINOGRADOV, A.P., akademik, otv. red.; BARANOV, V.I., red.; BARSUKOV, V.L., red.; BEUS, A.A., red.; VALYASHKO, M.G., red.; GERASIMOVSKIY, V.I., red.; KORZHINSKIY, D.S., red.; RONOV, A.B., red.; TUGARINOV, A.I., red.; KHITAROV, N.I., red.; SHCHERBINA, V.V., red.; TARASOV, L.S., red. izd-va; DOROKHINA, I.N., tekhn. red.

[Chemistry of the earth's crust]Khimiia zemnoi kory; trudy. Moskva, Izd-vo Akad.nauk. Vol.1. 1963. 430 p. (MIRA 16:3)

1. Geokhimicheskaya konferentsiya, posvyashchennaya stoletiyu so dnya rozhdeniya akademika V.I.Vernadskogo, Moscow, 1963. (Geochemistry)

VINOGRADOV, A.P.

V.I.Vernadskii; 100th anniversary of his birth. Geokhimiia no.3:195-198 Mr '63. (MIRA 16:9)
(Vernadskii, Vladimir Ivanovich, 1863-1945)

VINOGRADOV, A.P.

Biogeochemical provinces and their role in the organic evolution. Geokhimiia no.3:199-213 Mr '63. (MIRA 16:9)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Biogeochemistry)

VINOGRADOV, A.P.

Development of V.I.Vernadskii's theories. Pochvovedenie no.8: 1-10 Ag '63. (MIRA 16:9)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo.

L 18369-63 EWT(1)/EWP(q)/EWT(m)/FCC(w)/BDS/EEC-2/ES(v) AFFTC/ASD/ESD-3
ACCESSION NR: AP3005213 Pe-4 WH/GW S/0007/63/000/008/0715/0720

70
69

AUTHORS: Vinogradov, A. P.; Vdovy*kin, G. P.

TITLE: Diamonds in stony meteorites

SOURCE: AN SSSR. Geokhimiya, no. 8, 1963, 715-720

TOPIC TAGS: diamond, meteorite

ABSTRACT: Studies of meteorites with high carbon content confirmed the presence of diamonds in the meteorites Novy*y Urey and Goalpara and uncovered diamonds in the meteorites Dyalpur and Ghubara. Small portions of these meteorites were ground, cleaned of their organic (bituminous) contents, and then treated with aqua regia, HF, $HClO_4$ and HCl. The residue consisted of 0.3-0.9-mm grains. The hardness of these grains exceeded 9g, and their fluorescence in ultraviolet light was greenish. X-ray analyses of the residue proved the presence of diamonds. The compositions and structures of the four meteorites (three ureilites and one chondrite) are discussed. The authors attribute the formation of both graphite and diamonds to stresses imposed on carbonaceous inclusions during collisions of asteroids. Orig. art. has: 2 tables and 5 photographs.

Card 1/2

L 18369-63
ACCESSION NR: AP3005213

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 29May63 DATE ACQ: 27Aug63 ENCL: 00

SUB CODE: AS, EL NO REF SOV: 004 OTHER: 010

Card 2/2

VINOGRADOV, A.P., akademik

V.I.Vernadskii's scientific legacy. Vest. AN SSSR 33 no.3:91-96 Mr '63. (MIRA 16:3)
(Vernadskii, Vladimir Ivanovich, 1863-1945)

VINOGRADOV, A.P., akademik

Dating of events of the remote past; symposium held at Athens.
Vest. AN SSSR 33 no.6:84-86 Je '63. (MIRA 16:7)
(Geological time)

L 12978-63 EWT(l)/BDS/ES(a)/ES(j)/ES(c)/ES(k) AFFTC/ASD Pb-4
A/DD

ACCESSION NR: AP3000527 S/0020/63/150/002/0411/0413 67
66

AUTHOR: Vinogradov, A. P. (Academician); Kutyurin, V. M.; Ulubekova, M. V.; Zakharova, N. I.; Zadorozhny*y, I. K.

TITLE: Oxygen of photosynthesis and phosphates

SOURCE: AN SSSR. Doklady, v. 150, no. 2, 1963, 411-413

TOPIC TAGS: photosynthesis oxygen and phosphates, endocellular water, phosphorylation process, Elodea canadensis

ABSTRACT: This study investigated the proposal by Roux (C. R., Vol. 251, no. 18, 1925, 1960) that the oxygen during photosynthesis is formed from the hydroxyl radicals of phosphate ions. Measurement of tagged O sup 18 in endocellular water and in the oxygen given off by Elodea canadensis in solutions of H sub 2 O sup 18, KH sub 2 PO sub 4 sup 18, or Kh sub 2 P sup 32 O sub 4 sup 18 showed that the photosynthesis oxygen comes only from water and not from phosphate ions. That phosphate ions do not enter into the photolysis (as opposed to phosphorylation process) was further confirmed by analysis of tagged phosphorus in the plants. "In conclusion, we express thanks to N. M. Nazarov and K. G. Semenyuk for assistance in this work." Orig. art. has: 2 tables.

ASSOCIATION: Inst. of Geochemistry and Analytic Chemistry, Academy of Sciences

L 24414-65 EWT(1)/EWG(v)/FCC Po-4/Pe-5/Pq-4/Pg-4 GW/MLK

ACCESSION NR: AT5002636 S/0000/64/002/000/0005/0021

AUTHOR: Vinogradov, A. P.

TITLE: The gas cycle of the earth

SOURCE: Geokhimicheskaya konferentsiya Khimiya zemnoy kory. Moscow, 1964. Khimiya zemnoy kory (Chemistry of the earth's crust); trudy konferentsii, v. 2. Moscow. Izd-vo Nauka, 1964, 5-21

TOPIC TAGS: earth atmosphere, degasification, earth mantle, radiogenic gas, cosmic gas, cosmic dust, photosynthesis

ABSTRACT: The author proceeds from the concept that degasification of the mantle was the main mechanism leading to the formation, in the earth's gravitional field, of a gaseous envelope which was stable but variable in time. The gas sources examined were: the highly volatile fractions (mainly water vapor) of the mantle, gases and vapors of cosmic origin, gases from radioactive decay, gases from chemical and biochemical reactions, and gases of exogenous origin, i.e., meteorites and cosmic dust particles. The earth's atmosphere is analyzed with respect to its gains and losses owing to, for example, cosmic and radiogenic

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L 24414-65

ACCESSION NR: AT5002636

contributions, fractionation, and outcropping of gases on the one hand and dissipation and chemical and biological processes on the other. As regards the character of degasification, the author postulates that the bulk of the vapors and gases of the earth's atmosphere originated through degasification of the highly volatile fractions of the mantle, which brought to the surface of the earth about 10% of the total possible content of each gas or vapor. The gases that contributed to the formation of the atmosphere were for the most part of cosmic or radiogenic origin, whereas other gases, e.g. inert gases, were of nuclear origin. The degasification process was most intense during the early life of the earth, but events occurred which completely transformed the atmosphere, changed the salt composition of the oceans, and the face of the earth. These events were due entirely to the appearance of stable quantities of oxygen as a consequence of photosynthesis. As a result of oxidation, CO, CH_4, and NH_3 disappeared from the atmosphere and hydrosphere, an ozone screen was formed, and the content of N_2 increased in the atmosphere owing to oxidation of NH_3. Plants began to extract the CO_2 from the atmosphere. The composition of sea water changed due to a change in the carbonate-bicarbonate buffer and sulfate formed through oxidation of S, H_2S, and other compounds. A diagram of the main stages in the evolution of the

Card 2/4

L 24414-65

ACCESSION NR: AT5002636

atmosphere is shown in tabular form (see Table 1 of the Enclosure). Orig. art. has: 10 tables.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR (Geochemistry and analytical chemistry institute, AN SSSR)

SUBMITTED: 22Sep64 ENCL: 01 SUB CODE: ES, LS

NO REF SOV: 012 OTHER: 031

Card 3/4

L 24414-65

ACCESSION NR: AT5002636 ENCLOSURE: 01

Table 1. Diagram of the Main Stages in the Evolution of the Atmosphere

Surface temperature of earth	Composition of the atmosphere	
	Main Components	Secondary components
100	H_2O	N_2, NH_3, $B(OH)_3$, CO, CO_2, CH_4, HCl, HF, inert gases, etc.
100	N_2	CO_2, CO, CH_4, O_2, inert gases
10-20	O_2, N_2	Ar, CO_2, etc.

Card 4/4

VINOGRAD[illegible], A.P.; [illegible], L.[illegible]

Study of the [illegible] of [illegible] the superfast [illegible] Dokl. AN SSSR [illegible]: 387-389 Ap '65. (MIRA 18:7)

1. Institut [illegible] AN SSSR i Institut geologii [illegible] petrografii, mineralogii i geokhimii AN [illegible].

ACCESSION NR: AP4034717 S/0007/64/000/005/0395/0398

AUTHORS: Vinogradov, A. P.; Vdovy*kin, G. P.; Marov, I. N.

TITLE: Free radicals in the Mighei meteorite

SOURCE: Geokhimiya, no. 5, 1964, 395-398

TOPIC TAGS: electron paramagnetic resonance, meteorite, chondrite, organic radical

ABSTRACT: The Mighei chondrite fell in the vicinity of Odessa in 1889. It has been previously analyzed chemically, and carbonaceous matter has been determined. The present authors have made electron paramagnetic resonance studies on the meteorite to determine the structure of this carbonaceous material, and they have found free organic radicals to be present. The spectrum showed hyperfine structure corresponding to a complex type of free organic radical. EPR studies were made on other substances, such as ozokerite, gilsonite, rock salt, and graphite, but only coal showed a similar structure to that observed in the meteorite. It was established that the radicals are primary constituents and are not due to the chemical processes used in treating the meteorite during its analysis and the extraction of carbon.

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ACCESSION NR: AP4034717

The authors conclude that the free radicals were formed either during the evolution of matter before formation of the meteorite or were formed in the meteorite before it reached the earth. The existence of such radicals must modify our opinion of the evolution of matter. Their presence is confirmation of earlier views that simpler organic compounds, chiefly through the radical reactions of polymerization, gave rise to more complex forms. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 24Feb64 DATE ACQ: 20May64 ENCL: 00

SUB CODE: ES, AA NO REF SOV: 005 OTHER: 007

Card 2/2

VINOGRADOV, A.P.; GRINENKO, L.N.

Effect of enclosing rocks on the isotopic composition of sulfur in ore sulfides. Geokhimiia no.6:491-499 Je '64. (MIRA 18:7)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo AN SSSR i TSentral'nyy nauchno-issledovatel'skiy gornorazvedochnyy institut redkikh, rasseyannykh i blagorodnykh metallov (TSNIGRI), Moskva.

S/0007/64/000/007/0587/0600

ACCESSION NR: AP4042628

AUTHORS: Vinogradov, A. P.; Zadoroshny*y, I. K.

TITLE: Inert gases in stony meteorites

SOURCE: Geokhimiya, no. 7, 1964, 587-600

TOPIC TAGS: meteorite, inert gas, age determination/ MV 23 02 mass spectrometer

ABSTRACT: Twenty-one chondrites, three carbon-bearing chondrites, and one achondrite were examined for their contents of He, Ne, and A. The gases were extracted by heating the samples in a molybdenum crucible at 1700C for 30 min. Samples were crushed and given preliminary degassing treatment at 150C for three hours. Isotopic analysis was made on an MV 23-02 180° mass spectrometer. The resolving power of the setup was greater than 2000. Measuring errors were computed to be 2-3% for He^4 and 7% for Ne and A. Most of the stony meteorites contain inert gases that may be attributed to three different origins: primary, cosmogenic, and radiogenic. It is possible that some A may be of atmospheric origin as well (adsorption). Most of the investigated meteorites contain A and heavier inert gases, but less commonly contain He or Ne. The content and isotopic composition of inert gases from radioactive decay depend on the intensity and energy spectrum of cosmic

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ACCESSION NR: AP4042628

radiation, on the duration of irradiation, on the shielding effect, and on the chemical composition of the meteorite. The average isotopic ratios among decay products are 0.92 ± 0.02 for Ne^{21}/Ne^{22}, 5.4 ± 1 for He^{3}/Ne^{21}, and 8 ± 1 for Ne^{21}/Ar^{38}. Variation in the second ratio is due chiefly to cosmic radiation. No grouping of radiation ages was observed, but about 73% of the determinations gave values less than $10 \cdot 10^{6}$ years. Determinations of radiogenic age from He are generally smaller than those from K-A, probably because of relative losses through heating of the meteorites, but some are larger. The values range from 0.5 to $4.5 \cdot 10^{9}$ years. "We express our sincere thanks to L. G. Kvash and Ye. L. Krinov for supplying meteorite samples and making possible the completion of this work." Orig. art. has: 7 figures and 3 tables.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 04May64 ENCL: 00

SUB CODE: AA, NP NO REF SOV: 007 OTHER: 034

Card 2/2

BK

S/0007/64/000/009/0843/0848

ACCESSION NR: AP4045065

AUTHORS: Vinogradov, A. P.; Vdovy*kin, G. P.

TITLE: High-molecular organic substance in carbonaceous chondrites

SOURCE: Geokhimiya, no. 9, 1964, 843-848

TOPIC TAGS: meteorite, organic derivative, electron paramagnetic resonance, electron diffraction, infrared spectroscopy, aromatic hydrocarbon

ABSTRACT: The authors investigated the high-molecular organic materi l of several carbonaceous chondrites by infrared spectroscopy, x-ray studies, electron diffraction, electron paramagnetic resonance spectroscopy, and other methods. The infrared absorption spectrum of the Migei meteorite shows a number of bands: the one at 1080-1175 cm^{-1} is due to the C—H bond (aromatic); a weaker band at 1440 cm^{-1} is due to a deformed OH group of carboxyl or alcohol; a strong band with maximum at 1660 cm^{-1} corresponds to C=O oscillation in the carboxyl group, but could be related to similar oscillation in the aromatic group. Elemental analysis of the Staroye Boriskino meteorite shows 17.18% C, 5.47% H, 2.56% Cl, and 74.79% O+S+N. The high-molecular organic material in carbonaceous chondrites is thus found to have highly condensed aromatic structure. Free organic molecules

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ACCESSION NR: AP4045065

have been detected in the carbonaceous inclusions of the Burgavli iron meteorite and in the Staroye Boriskino, Cold Bokkeveld, and Groznaya carbonaceous chondrites. These molecules are localized in the Migei and Groznaya meteorites, but not in the other two. Cosmic rays were apparently responsible for the development of complex hydrocarbons from simpler forms of the premeteorite substance. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

SUBMITTED: 08Jul64 ENCL: 00

SUB CODE: AA, OC NO REF SOV: 005 OTHER: 005

Card 2/2

VINOGRADOV, A.I.; GRINENKO, V.A.; USTINOV, V.I.

Isotope composition of sulfur and carbon in the ore of the Shor-Su deposit (Uzbekistan). Geokhimiia no.11:1075-1086 N '64. (MIRA 18:8)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo AN SSSR, Moskva.

VINOGRADOV, A.P.; KROPOTOVA, O.I.; USTINOV, V.I.

Possible sources of carbon in natural diamonds according to C^{12}/C^{13} isotope data. Geokhimiia no.6:643-651 Je '65. (MIRA 18:7)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo AN SSSR, Moskva.

ACCESSION NR: AP5018369 UR/0007/65/000/007/0779/0790
552.112

AUTHORS: Vinogradov, A. P.; Yaroshevskiy, A. A.

TITLE: The physical [illegible] of [illegible] melting in the earth's mantle

SOURCE: Geokhimiya, no. 7, 1965, 779-790

TOPIC TAGS: zone melting, earth mantle, differentiation

ABSTRACT: On the basis of Vinogradov's previously proposed view that differentiation of the earth's shells may take place by a mechanism similar to zone [illegible] ... temperature [illegible] of melting. The actual melting-point curve is considerably higher than the adiabatic curve, and this indicates that the resulting melt would be convectively [illegible] ... and this would be

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ACCESSION NR: AP5018369

accompanied by transfer of heat from the lower, hotter zone to the upper, cooler one. Crystallization would then begin at the base and melting would take place at the top of the liquid zone. ... would occur, ...

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo, AN SSSR, Moscow (Institute of Geochemistry and Analytical Chemistry, AN SSSR)

VINOGRADOV, A.P., akademik

World problems of the geological science; results of the 22d session of the International Geological Congress. Vest.AN SSSR 35 no.8:63-66 Ag '65. (MIRA 18:8)

NALIVKIN, V.D.; RONOV, A.B.; KHAIN, V.Ye.; SOKOLOV, B.S.; DOMRACHEV, S.M.; TIKHIY, V.N.; POZNER, V.M., FORSH, N.N.; LYUTKEVICH, Ye.M.; SLAVIN, V.I.; SAZONOV, N.T.; SAZONOVA, I.G.; SHUTSKAYA, Ye.K.; KRASNOV, I.I.; KALENOVA, G.N.; VINOGRADOV, A.P., glav. red.;

[History of the geological development of the Russian Platform and its margins] Istoriia geologicheskogo razvitiia Russkoi platformy i ee obramleniia. Moskva, Nedra, 1964. 251 p. ___ [Maps] Karty. 981. (MIRA 18:4)

[illegible] Academy [illegible]

[illegible] geochronology, [illegible] activity, [illegible] magnetism, [illegible] physical pro- [illegible]

[illegible] of the Academy of Sciences, [illegible] heard [illegible] report of [illegible] Sciences, at [illegible] the Depart- [illegible] and the

Kazakhstan, Kirghiziya, [illegible]

Card 1/5

[illegible] waters. [illegible] waters. [illegible] geographical problems [illegible]
service for [illegible] problems [illegible]

Card 2/5

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859910010-7"

L 48340-65

ACCESSION NR: AP5009498

9

Central Asia were discussed at three interrelated geographic symposia held in Tashkent, Ashkhabad, and at Alma-Ata. The first dealt with the geographical aspects of irrigation in Central Asia; the second with the problems of desert conquest and the building of the Kara Kum canal; the third with the regulation of glacier melting in the mountains of Central Asia. Of special interest was the [illegible] Two [illegible] opinions were presented: [illegible] river waters for irrigation [illegible]

[illegible] ities of water transpiration by different types of vegetation. F. F. Davitay however, explained the paradox by the water supply at the river sources at the [illegible]

Card 3/5

L 48340-65
ACCESSION NR: AP5009498

eolian sands, and deltaic deposits of this region. M. I. Varentsov described oil prospects in southeastern Kazakhstan. This topic was discussed in greater detail in the paper by P. Ya. Avrov, M. I. Varentsov, V. I. Ditmar and B. Li. ... research in Kazakhstan ... by A. T. Andreyev ...

Card 4/5

L 48340-65
ACCESSION NR: AP5009498

12

related to the study of seismic processes. [illegible] reported by L. P. Zaitsev, candidate of physico-mathematical sciences. [illegible] with [illegible] of Western Turkmenistan. [illegible] the general structural history of the [illegible]-Himalayan [illegible]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 000 OTHER: 000

Card 5/5

VINOGRADOV, A.P.; TUGARINOV, A.I.

Pre-Cambrian geochronology of the eastern part of the Baltic Shield based on lead-uranium-thorium dating. Trudy Lab. geol. dokem. no.19:185-204 '64 (MIRA 17:8)

L 49332-65 /FS(s)/FS(r)-3/EEC(k)-2

ACCESSION NR: AP5010666 UR/0007/65/000/004/0387/0389

AUTHORS: Vinogradov, A. P.; Vdovykin, G. P.; Popov, N. M.

TITLE: Investigation of carbonaceous matter in meteorites by microdiffraction with ultrahigh velocity electrons

SOURCE: Geokhimiya, no. 4, 1965, 387-389

TOPIC TAGS: diffraction analysis, electron, electron microscopy, meteorite, carbon compound

ABSTRACT: The authors have investigated the structure of the high-molecular carbonaceous matter in the stony meteorites (carbonaceous chondrites) Mighei, Cold Bokkeveld, and Staroye Boriskino, the diamond-bearing achondrite-ureilite Novy Urei, and the carbonaceous inclusions of the iron meteorite Burgavli. The investigations were made with a high-voltage electron microscope having an accelerating voltage of [illegible]00 kv. The electron energy was 557 kev and the wavelength 0.016 Å. Allowable thickness of the test material with this setup was about 1 μ, and the microdiffraction selectivity ranged up to 0.05 μ. It was found that the carbonaceous matter in the carbonaceous chondrites consists of high-molecular organic compounds of both amorphous and crystalline structure.

Card 1/2

L 48337-65
ACCESSION NR: AP5010666

3

Extremely fine inclusions of finely dispersed black carbon were also detected, showing traces of graphitization. In the Novy Urei meteorite, organic polymers are present, but graphite and diamond form the principal carbonaceous matter. Black carbon and high-molecular organic compounds are also present in the Burgavli meteorite, but graphite is the principal carbonaceous constituent. The authors conclude that the structures of the carbonaceous matter in the meteorites permit the evaluation of not only the nature of development of the carbonaceous matter but of the meteorites themselves. They do not spell out this development, however. Orig. art. has: 4 figures.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR (Institute of Geochemistry and Analytical Chemistry AN SSSR); Institut [illegible] mineralogii i geokhimii AN SSSR, [illegible] Institute of [illegible] Geochemistry AN SSSR)

SUBMITTED: 01Feb65 ENCL: 00 SUB CODE: AA, NP

NO REF SOV: 006 OTHER: 000

Card 2/2

Card 1/

L 39435-65

ACCESSION NR: AP5007665

L 39425-65
ACCESSION NR: AP[illegible]

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. N. Vernadskogo Akademii Nauk SSSR (Institute of Geochemistry and

NR REF SOV: 012 OTHER: 001

Card 3/3

NEMODRUK, Aleksandr Andreyevich; KARALOVA, Zinaida Konstantinovna; VINOGRADOV, A.P., akademik, glav. red.; PALEY, P.N., red.; VOLYNETS, M.P., red.

[Analytical chemistry of boron ($_5B^{10,811}$)] Analiticheskaia khimiia bora ($_5B^{10,811}$). Moskva, Nauka, 1964. 282 p. (MIRA 17:11)

VINOGRADOV, A.P., akademik; SADOVSKIY, M.A.; AKHMEDSAFIN, U.M., akademik; GERASIMOV, I.P., akademik; YANSHIN, A.L., akademik; SHCHERBAKOV, D.I., akademik; PEYVE, A.V., akademik; ZAYTSEV, L.P., kand.fiz.-matem.nauk; OVCHINNIKOV, I.M.

Development of earth sciences in Central Asia and Kazakhstan; results of the out-of-town session of the Department of Earth Sciences. Vest.AN SSSR 35 no.3:128-150 Mr '65. (MIRA 18:4)

1. Chlen-korrespondent AN SSSR (for Sadovskiy). 2. AN Kazakhskoy SSR (for Akhmedsafin).

VINOGRADOV, A.P.; KORZHINSKIY, D.S.; SMIRNOV, V.I.; SHCHERBAKOV, D.I.; AYDIN'YAN, N.Kh.; VINOGRADOV, V.I.; VOL'FSON, F.I.; GENKIN, A.D.; DANCHEV, V.I., LUKIN, L.I.; OZEROVA, N.A.; PEREL'MAN, A.I.; REKHARSKIY, V.I.; SMORCHKOV, I.Ye.; FEODOT'YEV, K.M.; SHADLUN, T.N.; SHIPULIN, F.K.

Aleksandr Aleksandrovich Saukov, 1902-1964; obituary. Geol. rud. mestorozh. 7 no.1:124-125 Ja-F '65. (MIRA 18:4)

S/0020/64/157/002/0388/0391

ACCESSION NR: AP4042210

AUTHOR: Vaynshteyn, E. Ye.; Chirkov, V. I.; Vinogradov, A. P., Academician

TITLE: The structure of x-ray K β_5 —lines emitted by titanium in its oxides ($TiO_{0.85}$ - $TiO_{1.20}$)

SOURCE: AN SSSR. Doklady*, v. 157, no. 2, 1964, 388-391

TOPIC TAGS: x ray emission lines, titanium monoxide, x ray spectrum, fine structure

ABSTRACT: The purpose of this study was to investigate the fine structure of x-ray K β_5 -line emitted by titanium in specimens which correspond to titanium monoxide composition. X-ray studies were conducted on six samples of the following compositions: $TiO_{0.850}$; $TiO_{0.912}$; $TiO_{1.020}$; $TiO_{1.072}$; $TiO_{1.178}$; $TiO_{1.191}$. In addition Ti spectrum was studied in nitride close to stoichiometric composition, which similar to titanium monoxide has the NaCl type structure. The temperature during studies was 80 - 100 C. The results of experiments are shown in Figures 1 and 2 of the enclosure. The position of K β_5^{III} band in the titanium spectrum in all compositions remains essentially constant. The greatest differences in the

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ACCESSION NR: AP4042210

structure of K_{β_5} band of titanium in lower oxides, corresponding to different intervals of changes of index n, are associated with the difference of the relative intensity of band components. "The authors express their gratitude to S. M. Airy and Ya. V. Vasil'yev for preparation of specimens and L. I. Perevalova for the help with the experimental part". Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Institut neorgicheskoy khimii Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Inorganic Chemistry Siberian Branch Academy of Sciences SSSR)

SUBMITTED: 28Feb64 ENCL: 02

SUB CODE: OP NO REF SOV: 002 OTHER: 006

ENCLOSURE: 01

ACCESSION NR: AP4042210

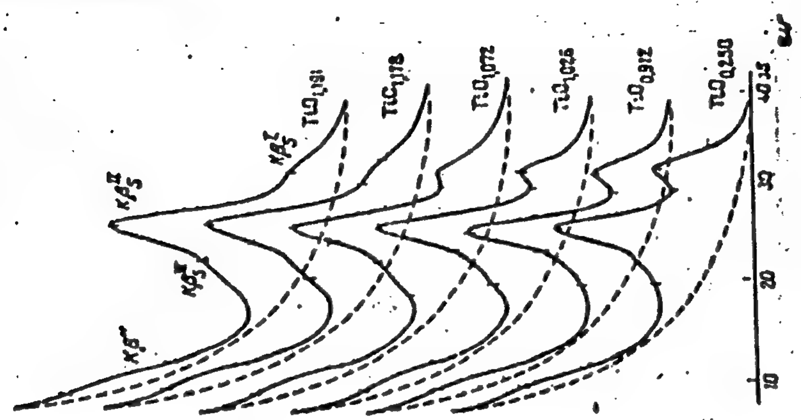

Fig. 1. The structure of the last K_β-emission bands of Ti in lower oxides (experimental curves).

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ENCLOSURE: 02

ACCESSION NR: AP4042210

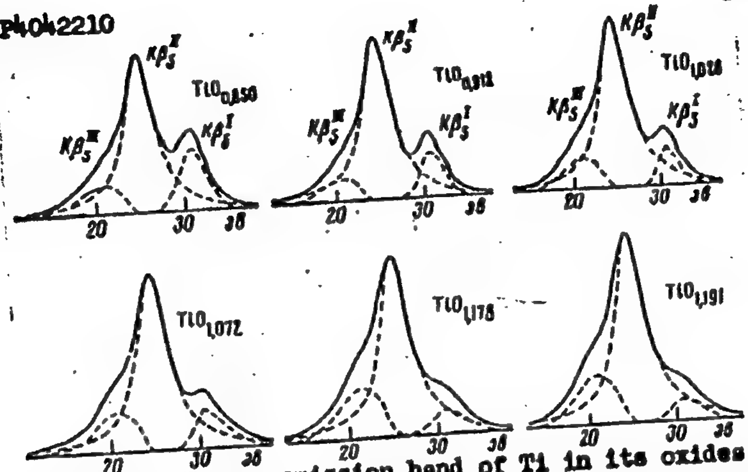

Fig. 2. Fine structure of $K_{\beta 5}$ — emission band of Ti in its oxides after removal of the background from K_{β_1} — line and after reduction to the same scale (according to the integral intensity of K_{β_1} -line). Dotted lines indicate components of the band.

Card 4/4

VINOGRADOV, A.P., akademik, otv. red.; KONDRAT'YEV, V.N., akademik, red.; ALIMARIN, I.P., red.; BAKH, N.A., doktor khim. nauk, red.; NEKRASOVA, G.A., kand. khim. nauk, red.

[Isotopes and radiation in chemistry; transactions] Izotopy i izlucheniia v khimii; trudy. Moskva, Izd-vo AN SSSR, 1958. 380 p. (MIRA 18:6)

1. Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke. 2d, Moscow, 1957. 2. Chlen-korrespondent AN SSSR (for Alimarin).

MANSKAYA, Sof'ya Moiseyevna, doktor biol. nauk; DROZDOVA, Tat'yana Vasil'yevna, kand. biol. nauk; VINOGRADOV, A.P., akademik, otv. red.

[Geochemistry of organic matter] Geokhimiia organicheskogo veshchestva. Moskva, Nauka, 1964. 314 p. (MIRA 18:1)

YELINSON, Samuil Vladimirovich; PETROV, Karl Ivanovich; KUZNETSOV, V.I., prof., retsenzent; YERMAKOV, A.N., retsenzent; VINOGRADOV, A.P., akademik, glav. red.; BUSEV, A.I., red.

[Analytical chemistry of zirconium and hafnium] Analiticheskaia khimiia tsirkoniia i gafniia. Moskva, Nauka, 1965. 239 p. (MIRA 18:2)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859910010-7"

L 34096-66 EWT(1) GW

ACC NR: AP6008803 SOURCE CODE: UR/0007/65/000/011/1275/1312

35 B

AUTHOR: Vinogradov, A. P.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: The substance of meteorites 12

SOURCE: Geokhimiya, no. 11, 1965, 1275-1312

TOPIC TAGS: meteorite, mineral, cosmic ray effect

ABSTRACT: This comprehensive review of the literature on the composition of meteorites consists of the following sections: composition and classification of meteorites, fractionation of the chemical composition of meteorites, products of cosmic irradiation of meteorites, a discussion of the extent to which the composition of meteorites reflects the composition of the meteorite belt, the origin of meteorites, and the problems of cosmochemistry of the immediate future. The distribution of brecciated forms and polymorphous alterations in meteoritic matter is indicative of collision and agglomeration of heterogeneous matter

UDC: 550.4:552.6:551.12

Card 1/2

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ACC NR: AP6008803

resulting in the formation of different meteorites. Molecules containing Mg, Fe, and other meta- and orthosilicates, the feldspar structure, etc. are the major components of the silicate portion of the composition of meteorites. Iron-nickel alloys and to a lesser extent troilite, chromite, phosphides, carbides, etc. form an independent phase. Since the number of minerals constituting meteorites is approximately 50, while there are about 5000 minerals on earth, the chemical fractionation of meteoritic matter must be different from the magmatic differentiation of the earth's crustal matter. The main composition of chondrites, achnodrites, iron-stony and iron meteorites is considered with special emphasis on the content of cosmic radiation products, i.e., neutral gases and long-lived isotopes. On the basis of statistics it is postulated that the composition of meteorites fallen and found on earth is not representative and apparently does not reflect the true composition of the matter of the meteorite belt of the solar system. Orig art. has: 18 figures and 16 tables.

SUB CODE: 03 / SUBM DATE: 06Aug65 / ORIG REF: 033 / OTH REF: 124

Card 2/2 vmb

L 04702-67 FSS-2/EWT(1)/EWT(m)/FCC JKT/TT/GW

ACC NR: AP6028010 SOURCE CODE: UR/0007/66/000/008/0891/0899

82
B

AUTHOR: Vinogradov, A. P.; Surkov, Yu. A.; Chernov, G. M.; Kirnozov, F. F.; Nazarkina, G. B.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Measurement of gamma-radiation of the lunar surface by the Luna-10 spaceship [Paper presented at the Seventh COSPAR Meeting held in Vienna in May 1966]

SOURCE: Geokhimiya, no. 8, 1966, 891-899

TOPIC TAGS: radiation measurement, gamma radiation, moon, lunar probe, scintillation spectrometer

ABSTRACT: The spaceship Luna 10, placed into a selenocentric orbit on 3 April 1966, was equipped with a 32-channel scintillation spectrometer to investigate the intensity and spectral composition of γ-radiation emitted from the lunar surface. The absence of an atmosphere sufficiently dense to absorb γ-rays makes it possible for a spaceship in lunar orbit to register γ-radiation. However, the counting rate measured from an orbiting spaceship decreases as a result of a decrease in the solid angle subtended by the visible surface

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of the Moon, which was 0.9* at periselene and 0.46* at aposelene in the initial orbit.

It is known that the content of natural radioactive elements (U, Th, K^{40}) in terrestrial rocks decreases from acidic to basic to ultrabasic rocks and that the decrease covers a range of several orders of magnitude. Therefore, it was expected that it would be possible to determine the type of rocks present in the lunar surface from the relative content of U, Th, and K established from the the γ-ray spectrum. In conducting the experiments, the fact that the level of γ-radiation from natural radioactive elements can be lower than the level of γ-radiation produced during the interaction of primary cosmic particles (primarily protons) with the lunar surface was taken into account by analyzing the characteristic γ-rays emitted during the interaction.

Instrumentation

The measurements were made with a scintillation spectrometer consisting of a 3 x 4-cm NaI(Tl) cylindrical crystal γ-ray detector with an FEU-16 photomultiplier and a pulse-height analyzer. To eliminate the back-

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ground from charged particles, the NaI(Tl) crystal was enclosed in a container of a thin plastic scintillator. The pulses generated by charged particles were registered by the NaI(Tl) crystal and the plastic scintillator and were then separated from the pulses generated by γ-rays which went practically unregistered by the plastic scintillator.

The scintillation spectrometer recorded γ-ray spectra in the energy ranges between 0.3—3.1 and 0.15—1.5 Mev. The switching of energy ranges was performed by ground command. The detector and the analyzer of the spectrometer were located in a hermetically sealed compartment under a shell 1 g/cm^2 thick.

Experimental Results

Six γ-ray spectra in the energy range 0.3—3.1 Mev were obtained during the first month of operation of Luna 10. In addition, the integrated intensity of γ-radiation in the same energy range was obtained at approximately 15 points. The measurements were conducted over relatively wide surface areas covering the continents and the seas on both the light and the dark sides of the Moon. The height and the approximate selenographic coordinates

of the regions above which the spectra were measured are given in Table 1.

Table 1. The Height Above the Lunar Surface and the Selenocentric Coordinates of the Regions Above Which Measurements Were Made

No. of spectrum	Date and time of measurement	Average height above surface	Selenographic latitude (Deg)		Selenographic longitude (Deg)	
			Start	End	Start	End
1	5 Apr 19 h 26 m	350	+70	+62	185	228
2	5 Apr 20 h 11 m	600	-22	-40	272	279
3	8 Apr 4 h 45 m	700	-47	-63	253	273
4	9 Apr 1 h 37 m	600	-53	-64	252	272
5	18 Apr 12 h 45 m	600	±30	+52	291	305
6	21 Apr 13 h 56 m	1000	-58	-45	208	220

Fig. 1 (curve 1) shows one of the primary γ-ray spectra (spectrum No. 3 in Table 1), taken above the dark side of the Moon. The background due to

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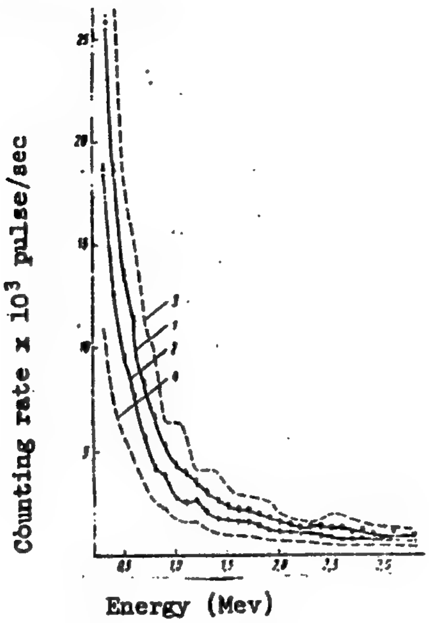

Fig. 1. Gamma-ray spectra obtained by Luna 10 while in orbit around the Moon and along the trajectory of the flight from the earth to the Moon

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1 - γ-ray spectrum of the lunar rocks together with the background; 2 - γ-ray spectrum of the background due to interaction of cosmic rays with the material of Luna 10 corrected for the screening by the Moon; 3 and 4 - same spectra as those given by 1 and 2, respectively, recalculated to represent measurements which would be taken at the surface of the Moon. The errors shown are root-mean-square errors.

interaction of cosmic rays with the substance of Luna 10, taking the screening by the moon into account, is also shown in Fig. 1 (curve 2).

Compared to the counting rate of γ-rays measured along the flight trajectory, the counting rate in orbit around the Moon increased by 30—40%.

As a result of the screening effect of the Moon, the background due to irradiation of the spaceship by cosmic particles near the Moon decreases and is equal to about 78—89% of the background encountered along the trajectory of the flight. The background spectrum was measured during the flight

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of Luna 10 toward the Moon at a distance of about 230,000 km from the Earth. The principal part of the γ-ray background registered is associated with inelastic interactions of charged particles with the substance of Luna 10 and is not primary cosmic γ-radiation. The natural radioactivity was small due to the small amounts of K, Th, and U present in the spaceship. There were no radioactive sources aboard the Luna 10. Fig. 1 also shows curves calculated so as to represent measurements that would be obtained directly at the surface of the Moon. Curve 3 in Fig. 1 shows the γ-ray spectrum at the lunar surface together with the background due to irradiation of the spaceship, while curve 4 in Fig. 1 shows the background alone.

Fig. 2 (curve 1) shows the spectrum of γ-radiation of lunar rocks (after subtraction of the background) obtained by Lunar 10 while in orbit. This curve represents the difference between spectra represented by curves 1 and 2 of Fig. 1. Fig. 2 shows that the lunar γ-ray spectrum differs considerably from the spectrum of γ-radiation emitted by the surface of the Earth [not shown], the shape of which is primarily determined by the content of natural radioactive elements in the rocks. A distinguishing feature of the lunar γ-ray spectrum is its relatively flat slope and large number of

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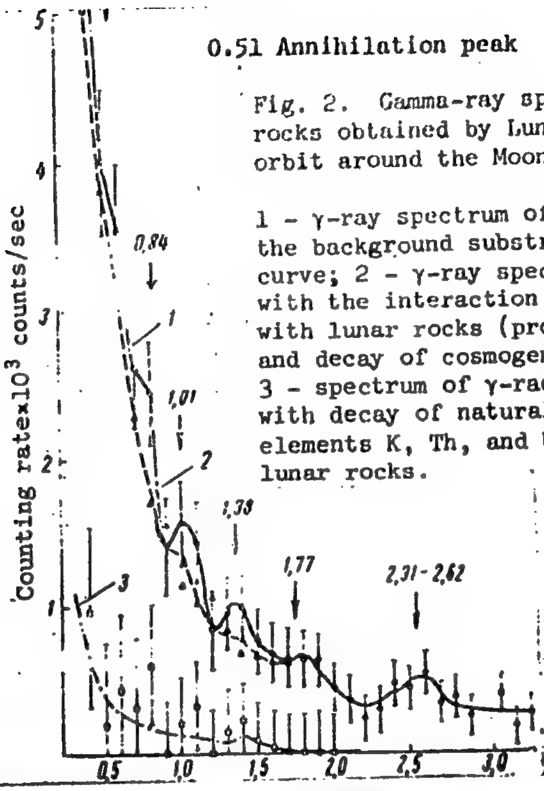

Fig. 2. Gamma-ray spectrum of lunar rocks obtained by Luna 10 while in orbit around the Moon

1 - γ-ray spectrum of lunar rocks with the background substracted from the curve; 2 - γ-ray spectrum associated with the interaction of cosmic rays with lunar rocks (prompt γ-radiation and decay of cosmogenic isotopes), 3 - spectrum of γ-radiation associated with decay of natural radioactive elements K, Th, and U contained in lunar rocks.

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ACC NR: AP6028010

hard γ-rays with energies in excess of 1.5 Mev while the spectrum of natural radioactive elements is characterized by a steep slope at higher energies and the absence of γ-rays with energies greater than 2.62 Mev. This shows that most γ-radiation from the lunar surface is not associated with the natural radioactivity of U, Th, and K^{40} but is the result of the interaction of cosmic rays with the lunar substance and the decay of cosmogenic isotopes.

Table 2 shows the characteristic γ-rays identified from the lunar γ-ray spectra and the principal nuclear reactions involving the probable constituent elements of lunar rocks. It can be seen from Table 2 that O, Si, Al, and Mg are likely the most widely distributed elements in lunar rocks.

Table 2. Energies of Gamma Rays Identified From the Lunar Gamma-Ray Spectra

Energy (Mev)	Principal Nuclear Reactions Causing Emission of Characteristic Gamma-Rays
0,84	$Al^{27}(p,p'\gamma)Al^{27}$, $Si^{28}(p,2p\gamma)Al^{27}$, $Fe^{56}(p,p'\gamma)Fe^{56}$
1,01	$Al^{27}(p,pn\gamma)Al^{26}$, $Si^{28}(p,2pn\gamma)Al^{26}$
1,37	$Mg^{24}(p,p'\gamma)Mg^{24}$, $Al^{27}(p,pt\gamma)Mg^{24}$, $Si^{28}(p,p\alpha\gamma)Mg^{24}$
1,78	$Mg^{24}(p,p\alpha\gamma)Ne^{20}$, $Al^{27}(p,2p\gamma)Mg^{26}$, $Si^{28}(p,p'\gamma)Si^{28}$
2,31 2,62	$O^{16}(p,2pn\gamma)N^{14}$, $Mg^{24}(p,pn\gamma)Mg^{23}$, $Mg^{24}(p,2p\gamma)Na^{23}$, $Al^{27}(p,ptn\gamma)Mg^{23}$

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Since the lunar surface is exposed to constant interaction with cosmic rays, all of the cosmogenic radioisotopes should be in radioactive equilibrium. Therefore, both long-lived and short-lived radioisotopes should be radioactive, and their content should be proportional to the effective cross section for their production. Calculations show that the main contribution to γ-ray emission is made by the decay of the following cosmogenic isotopes: O^{14} ($T_{1/2}$ = 72 sec, E_γ = 2.31 Mev), O^{19} ($T_{1/2}$ = 27 sec, E_γ = 1.37 Mev), F^{20} ($T_{1/2}$ = 10.7 sec, E_γ = 1.63 Mev), Na^{22} ($T_{1/2}$ = 2.6 hr, E_γ = 1.28 Mev), Na^{24} ($T_{1/2}$ = 15 hr, E_γ = 1.37 Mev and 2.76 Mev). These radioisotopes are formed with a considerable yield in nuclear reactions involving the same rock-forming elements: Mg, Al, and Si.

The peak at 0.51 Mev, which is especially pronounced in the lunar γ-ray spectra measured in the energy range 0.15—1.5 Mev, is produced by γ-radiation emitted during annihilation.

Analysis of the results shows that the γ-radiation intensity corrected for the difference in height is practically constant above the different regions of the lunar surface (intensities did not differ by more than 40%). This can probably be attributed to the fact that the main source of γ-rays is cosmic radiation. A preliminary analysis shows that the total dose rate of

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γ-radiation above the lunar surface is somewhat higher than the dose rate above the rocks of the Earth's crust. The dose rate of γ-radiation emitted by the lunar surface is roughly 1.5—2 times greater than that emitted by terrestrial granites (14 μr/h).

An evaluation of the natural radioactivity and the concentration of natural radioactive elements can be made by substracting the effect of γ-radiation produced in the ineraction of cosmic rays with lunar rocks from the overall lunar γ-ray spectrum. Although the exact shape of the γ-ray spectrum induced by cosmic rays is unknown, approximate results can be obtained by using the shape of the spectrum obtained along the flight trajectory of Luna 10 from the Earth to the Moon. Curve 2 in Fig. 2 shows the spectrum of γ-radiation from the Moon produced by cosmic rays, determined by combining the γ-ray spectra obtained along the flight trajectory with the γ-ray spectrum of the lunar rocks in the energy range exceeding 2 Mev (the contribution of the natural isotopes is almost zero). This approximation is justified only if the γ-ray spectra induced by cosmic rays in the spaceship and in the lunar rocks have the same shape and differ only in intensity. This assumption was demonstrated to be justified by both theoretical calculations and modeling experiments performed by the authors. The validity of this

assumption follows from the fact that the spaceship and its components were made of light alloys of Si, Al, and Mg with very little Fe, i. e., the dominant elements in the composition of rocks. Curve 3 in Fig. 2, obtained by subtracting curve 2 from curve 1, shows the γ-ray spectrum produced by the decay of natural radioactive elements. Fig. 2 shows that 90% of the intensity of gamma radiation emitted by lunar rocks is produced by radioactivity induced by cosmic rays and no more than 10% by decay of K, Th, and U.

Prior to the flight the γ-spectrometer aboard the spaceship was precalibrated using samples with a measured amount of K, Th, and U and also with rock samples containing different amounts of these elements. This procedure made it possible to calculate the γ-ray spectra, which should be obtained by the orbiting spaceship, emitted by rocks with different amounts of natural radioactive elements (it was assumed that the radiation produced by cosmic rays is absent). Fig. 3 shows such spectra which would be obtained at a height of 350 km with the background subtracted from the spectrum. The hatched areas correspond to range of concentrations of radioactive elements for given types of rock. The average values of concentrations of K, Th, and U were taken from a paper by A. P. Vinogradov (Geokhimiya, no. 7, 1962).

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Comparison of the lunar γ-ray spectra with those of terrestrial rocks with a known content of K, Th, and U shows that at least in the regions of the Moon over which measurements were conducted there are no rocks on the lunar surface, or at a depth not exceeding 27 cm, containing the same amount of K, Th, and U as do the acidic terrestrial rocks, such as granites. The intensity of γ-radiation due to natural radioactivity (Fig. 2, curve 3) tends to indicate the presence of basic rocks such as basalts. However, at the present time it is impossible to exclude the possibility that the concentration of natural radioactive elements was estimated a bit too high. It is interesting to note that tektites, which have almost the same composition and amounts of U, Th, and K as acidic rocks, cannot be of lunar origin.

Conclusions

The main results obtained from the measurements of the intensity and spectral composition of γ-radiation by the Luna 10 can be summarized as follows:

1. The overall level of γ-radiation of the lunar surface slightly exceeds that of the Earth. Preliminary results show that the intensity of γ-radiation of

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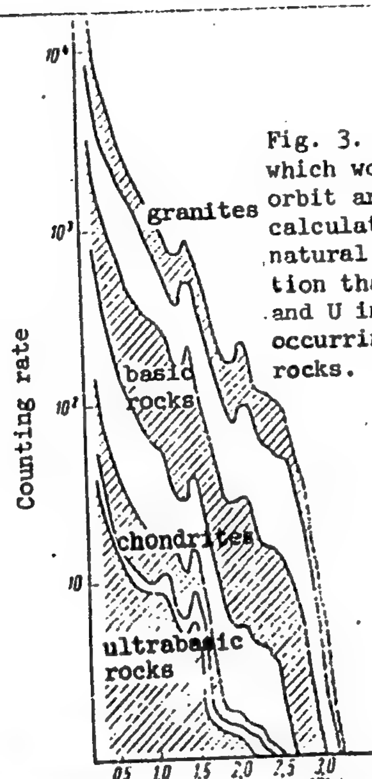

Fig. 3. The γ-ray spectra of lunar rocks which would be observed by a spaceship in orbit around the Moon. The spectrum was calculated from the γ-ray spectra of natural radioactive elements on the assumption that the relative contents of K, Th, and U in lunar rocks correspond to those occurring in the most important terrestrial rocks.

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ACC NR: AP6028010

the surface of the Moon is 20—30 μr/h.

2. About 90% of the γ-rays emitted by the surface of the Moon is produced during interaction of cosmic rays with lunar substance (prompt γ-rays and decays of cosmogenic isotopes).

3. The basic rock-forming elements of the lunar surface are believed to be O, Mg, Al, and Si.

4. No difference was noted in intensity of γ-rays emitted by different regions of the lunar surface including the seas and the continents (variation of intensity did not exceed 40%).

5. The decay of K, Th, and U in lunar rocks does not contribute more than 10% to the total γ-ray emission of the lunar surface.

6. Comparison of the intensity of γ-radiation from the decay of natural radioactive elements K, Th, and U with the results obtained by a calibrated instrument from terrestrial rocks shows that the concentration of radioactive elements in lunar rocks is close to that of basic terrestrial rocks and differs greatly from acidic rocks. However, it can not be positively stated that the lunar surface contains no ultrabasic (meteoritic) substance. At the present time an attempt is being made to determine the relative content of O, Mg, Al, and Si in lunar rocks from the available γ-ray spectra produced in interactions with cosmic rays. Orig. art. has: 3 figures and 3 tables. [FSB: v. 2, no. 10]

SUB CODE: 22 / SUBM DATE: 24Jun66 / ORIG REF: 002

Card 15/15

ACC NR: AP7005449 SOURCE CODE: UR/0020/66/170/003/0561/0564

AUTHOR: Vinogradov, A. P. (Academician); Surkov, Yu. A.; Chernov, G. M.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Investigations of the intensity and spectral composition of lunar gamma radiation on the automatic station "Luna-10"

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 561-564

TOPIC TAGS: gamma spectrum, gamma spectrometer, scintillation spectrometer, bremsstrahlung, cosmic radiation, meson, lunar satellite, photomultiplier/Luna-10 lunar satellite, FEU-16 photomultiplier

ABSTRACT: "Luna-10" carried a scintillation gamma spectrometer with a detector of γ-radiation; this was a NaI(Tl) crystal measuring 30 x 40 mm, connected to a FEU-16 photomultiplier, and a pulse amplitude analyzer. The instrument made it possible to measure the spectrum of γ-radiation against a background of charged particles. The instrument recorded the spectrum of γ-radiation in two ranges: from 0.3 to 3.1 MeV and from 0.15 to 1.5 Mev. During the first month of operation of "Luna-10" it was possible to obtain 6 spectra of γ-radiation in the energy range from 0.3 to 3.1 MeV. In addition, at approximately 15 points the intensity of γ-radiation was measured in this same range of energies. The measurements covered rather extensive areas of the surface, including both the "continents" and "seas" on both the visible and far sides. Analysis of the form of the lunar γ-spectra revealed that they differ

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ACC NR: AP7005449

considerably from the spectra of terrestrial γ-radiation, whose form is determined for the most part by the content of natural radioactive elements in rock. For the moon the greater part of the γ-radiation is that arising during interaction of cosmic rays with lunar matter and from the decay of cosmogenic radioisotopes. The principal contribution is from the following cosmogenic isotopes: O^{14}, O^{19}, F^{20}, Na^{22}, and Na^{24}. Table 1 gives the energy of gamma rays identified in the lunar gamma spectrum. In addition to nuclear reactions leading to the omission of characteristic γ-quanta (instantaneous γ-radiation and the decay of cosmogenic isotopes) there is some contribution from processes of the decay of π^0 mesons and the bremsstrahlung of electrons and protons. Preliminary data indicate that the total intensity of gamma radiation on the lunar surface exceeds the intensity over the rocks of the earth's crust by 1.5-2 times and changes little from one part of the lunar surface to another. About 90% of the gamma radiation of lunar rocks can be attributed to the effect of cosmic rays and not more than 10% is due to the decay of K, Th and U. Orig. art. has: 1 figure and 1 table. [JPRS: 38,677]

SUB CODE: 22, 18, 20 / SUBM DATE: 23Jun66 / ORIG REF: 003

Card 2/2

ACC NR: AP6031062 SOURCE CODE: UR/0007/66/000/009/1106/1109

AUTHOR: Vinogradov, A. P.; Vdovykin, G. P.; Karyakin, A. V.; Zubrilina, M. Ye.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Investigation of the organic compounds and diamonds of the Novyy Urey meteorite by infrared absorption spectroscopy

SOURCE: Geokhimiya, no. 9, 1966, 1106-1109

TOPIC TAGS: meteoritics, diamond, ~~infrared~~ IR absorption spectroscopy, organic compound, meteorite, IR spectroscopy, absorption band

ABSTRACT: The organic compounds and diamonds of the Novyy Urey meteorite, which fell in the Gor'kiy oblast' in 1886, are investigated by means of infrared absorption spectroscopy. The Novyy Urey meteorite, like the Goalpara meteorite with which it is compared, is an ureilite. Specimens were examined with the UR-10 quartz spectrograph. The organic compounds were extracted with chloroform, while the diamonds were extracted by fusing the meteorite powder with Na_2O_2. The presence of the CH_3 and CH_2 groups was positively confirmed, while the presence of C-N-H groups was thought possible. The organic matter was represented by paraffin hydrocarbons. In the infrared spectrum of the diamond fraction, absorption bands appeared at 500 cm^{-1} and especially at 900—1300 cm^{-1}. These absorption bands are characteristic of type-I

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ACC NR: AP6031062

diamonds containing and admixture of nitrogen in their crystal lattice. The presence of nitrogen in the diamonds of the Novyy Urey meteorite is thought to suggest a genetic raltionship between ureilite diamonds and the carbonaceous matter in chondrites. The nitrogen, most probably, was captured by the diamonds during crystallization resulting from a collosion with asteroids. Orig. art. has: 3 figures. [DM]

SUB CODE: 03/ SUBM DATE: 21Apr66/ OTH REF: 002

Card 2/2

ACC NR: AP7005118 SOURCE CODE: UR/0007/66/000/008/0891/0899

AUTHOR: Vinogradov, A. P.; Surkov, Yu. A.; Chernov, G. M.; Kirnozov, F. F.; Nazarkina, G. B.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Measurements of gamma radiation of the lunar surface by the space station Luna-10

SOURCE: Geokhimiya, no. 8, 1966, 891-899

TOPIC TAGS: gamma spectrum, lunar satellite, earth crust, lunar surface, lunar radiation / Luna-10 lunar satellite

ABSTRACT: During its first month of operation the lunar satellite "Luna-10" obtained six spectra of gamma radiation in the energy range from 0.3 to 3.1 MeV. In addition, at about 15 points it measured the total intensity of gamma radiation in the same energy range. The measurements covered extensive areas of the surface of both the seas and continents on both sides of the moon. It was found that the general level of gamma radiation of lunar rocks approaches the level of gamma radiation over the rocks of the earth's crust, somewhat exceeding the latter. The preliminary estimate of gamma radiation for the lunar surface is 20-30 μ curies. The principal contribution to lunar gamma radiation is from processes of interaction of cosmic rays with lunar matter (instantaneous gamma radiation and the decay of isotopes). About 90% of the total lunar gamma radiation can be attributed to these processes. Analysis

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ACC NR: AP7005118

makes it possible to identify in the lunar spectrum photopeaks from gamma quanta emitted at the time of interaction between cosmic particles and the principal rock-forming elements of the lunar surface — O, Mg, Al, Si, as well as gamma quanta emitted during the decay of cosmogenic isotopes. (The possibility of determining the relative content of these elements now is being studied.) Results of measurements over different regions of the lunar surface, including the seas and continents, did not reveal an appreciable difference in the intensity of gamma radiation over these regions (intensity variations do not exceed 40%). In the total intensity of gamma radiation of lunar rocks the percentage of radiation caused by decay of K, Th and U is approximately 10%. Comparison of the intensity of gamma radiation from decay of the natural radioactive elements K, Th and U with the results of calibration of the instrument against terrestrial rocks makes it possible to ascribe to lunar rocks concentrations of radioactive elements close to terrestrial rocks of basic composition (such as basalts). The data indicate that there are no areas of rocks with concentrations of radioactive elements such as terrestrial granites, and especially none with ore concentrations of K, Th and U. Orig. art. has: 3 figures and 3 tables. /JPRS: 38,460/

SUB CODE: 03,22,20 / SUBM DATE: 24Jun66 / ORIG REF: 002

ACC NR: AP7002296 SOURCE CODE: UR/0020/66/168/004/0900/0903

AUTHOR: Vinogradov, A. P.; Devirts, A. L.; Dobkina, E. I.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy AN SSSR (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: C^{14} concentration in the atmosphere at the time of the Tunguska Catastrophe and antimatter

SOURCE: AN SSSR. Doklady, v. 168, no. 4, 1966, 900-903

TOPIC TAGS: meteorite, antimatter / Tunguska meteorite

ABSTRACT:
In 1965 Cowan, Atlury and Libby analyzed a number of hypotheses on the cause of the explosion of the Tunguska meteorite; they concluded that the antimatter hypothesis most satisfactorily explained all the accompanying phenomena. If antimatter, in fact, was responsible, there should have been an associated increase of radioactive carbon. Accordingly, this paper describes an investigation for determination of C^{14} in tree rings in the immediate area of the Tunguska explosion (60 km to the south of the epicenter). The 140-year-old tree was cut in 1961. The growing season for the tree was such that any increase of C^{14} would be reflected in the tree ring for 1908. Other rings also were studied -- 1885-1890 (as a control), 1894, 1901, 1907,

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0925 0562

ACC NR: AP7002296

1908, 1909, 1910, 1913. All other factors which could account for increases or variations of C^{14} content were taken into account. No evidence was found on this basis which would justify the assertion that the so-called Tunguska catastrophe was related to the penetration of antimatter into the earth's atmosphere. Orig. art. has: 3 figures. [JPRS: 37,397]

SUB CODE: 20,03 / SUBM DATE: 15Mar66 / ORIG REF: 008 / OTH REF: 008

Card 2/2

ACC NR: AP7007599 SOURCE CODE: UR/0293/66/004/006/0871/0879

AUTHOR: Vinogradov, A. P.; Surkov, Yu. A.; Chernov, G. M.; Kirnozov, F. F.; Nazarkina, G. B.

TITLE: Preliminary results of measurements of gamma radiation of the lunar surface on the space station "Luna-10"

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 6, 1966, 871-879

TOPIC TAGS: lunar satellite, gamma spectrometer, cosmic radiation

SUB CODE: 22, 20,18

ABSTRACT: Experimental investigations of the intensity and spectral componsition of gamma radiation of lunar rocks made using a gamma spectrometer carried aboard the automatic station "Luna-10" demonstrated that: 1) The general level of gamma radiation of lunar rocks approaches the level of gamma radiation over rocks of the earth's crust, somewhat exceeding the latter. According to a preliminary estimate, the intensity of the gamma radiation at the lunar surface is 20-30 μR/hour. 2) The principal contribution to lunar gamma radiation is from processes of the interaction of cosmic rays with lunar matter (instantaneous gamma radiation and the decay of cosmogenic isotopes). About 90% of the total lunar gamma radiation can be attributed to these processes. 3) Analysis made it possible to identify in the lunar spectrum photopeaks from gamma quanta emitted during the interaction of cosmic particles with the principal rock-forming elements of the lunar surface -- O, Mg, Al, Si -- and gamma quanta emitted during the decay of cosmogenic isotopes. 4) The results of measurements over different regions of the lunar surfaces, including the regions of the lunar "continents" and Seas" did not make

 UDC: 629.195.3:523.36

0928 1543

ACC NR: AP7007599

possible detection of an appreciable difference in the level of intensity of gamma radiation over these regions (the changes of intensity do not exceed 40%). 5) In the total intensity of gamma radiation of lunar rocks the percentage of radiation caused by the decay of K, Th and U is not greater than 10%. 6) Comparison of the intensity of gamma radiation from the decay of natural radioactive elements K, Th and U with the results of instrument calibration against terrestrial rocks makes it possible to ascribe to lunar rocks concentrations of radioactive elements close to terrestrial rocks of basic composition of the basalt type. The collected data make it possible to exclude for those regions of the lunar surface where the measurements were made the existence of rocks with a content of the radioactive elements K, Th and U such as in terrestrial acidic rocks (granites) and especially rocks with ore concentrations of these elements. Orig. art. has: 3 tables and 3 figures. [JPRS: 39,718]

ORG: none

Card 2/2

ACC NR: AP7008879 SOURCE CODE: UR/0030/66/000/009/0093/0097

AUTHOR: Vinogradov, A. P. (Academician)

ORG: none

TITLE: Geochemical problems of development of the ocean

SOURCE: AN SSSR. Vestnik, no. 9, 1966, 93-97

TOPIC TAGS: geochemistry, oceanographic conference

SUB CODE: 08

ABSTRACT: A summarization of a report by Academician A. P. Vinogradov, presented at the International Oceanographic Congress in Moscow, now has been published. In this paper he considered the general development of the ocean, with necessary consideration of the evolution and differentiation of the deep layers of the earth. As part of this process he postulates that as a result of degasification the outpouring of basalts always brought to the surface an average of 7% by weight of juvenile water in the form of water vapor or in a liquid state. He also postulates that the ratio between the mass of ejected basalt, water and gases changes little in geological time. He contends that the main mass of water must have arrived at the earth's surface in the process of formation and development of the continents and only a minor part of it in the process of formation of the basaltic oceanic crust. This conclusion, paradoxical at first glance, suggests that the change of the volume of water in the ocean and change of its level was determined primarily by the development of the continents. Orig. art. has: 2 figures. [JPRS: 38,937]

Card 1/1 UDC: 551.46: 550.4

0929 1680

VINOGRADOV, A.F.

BERESHNEV, [illegible], VINOGRADOV, A.F., [illegible], [illegible]

Leather

Classification of hard leather. Leg. prom., No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified

1. VINOGRADOV, A.P.

2. USSR (600)

4. Leather Industry - Standards

7. Units of measurement for heavy leather. Leg.prom. no. 12, 1952

<u>Monthly Lists of Russian Accessions</u>, Library of Congress, <u>March</u>, 1953, Unclassfied.

VINOGRADOV, A.P.

ZYBIN, Yu.P., doktor tekhnicheskikh nauk, professor; STESHEV, I.I., retsenzent; VINOGRADOV, A.P., retsenzent.

[Technology of footwear] Tekhnologiia obuvi. Moskva, Gos. nauchno-tekhn. izd-vo Ministerstva promyshlennykh tovarov shirokogo potrebleniia SSSR, 1953. (MLRA 7:6)

(Shoe industry)

ZYBIN, Yuriy Petrovich, doktor tekhnicheskikh nauk, professor; STESHOV, I.I., retsenzent; VINOGRADOV, A.P., retsenzent; MINAYEVA, T.M. redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor.

[Technology of footwear] Tekhnologiia obuvi. Moskva, Gos.nauchno-tekhn.izd-vo Ministerstva promyshlennykh tovarov shirokogo potrebleniia SSSR, Pt. 2, 1955. 446 p. (MLRA 8:10)
(Shoe industry)

VINOGRADOV, A.P.

Unit for coating electrode packages with paraffin. Mashino-stroitel' no.4:38-39 Ap '60. (MIRA 13:6)
(Protective coatings)

VINOGRADOV, Aleksandr Petrovich; KEDRIN, Yevgeniy Alekseyevich; TSEREVITINOV, Boris Fedorovich; SERGEYEV, M.Ye., zasl. deyatel' nauki, prof., doktor tekhn. nauk, retsenzent; BULGAKOV, N.V., prof., doktor tekhn. nauk, retsenzent; PLATUNOV, K.M., kand. tekhn. nauk, retsenzent; SHVETSOVA, T.P., inzh., retsenzent; MURVANIDZE, D.S., inzh., retsenzent; YEGORKIN, N.I., prof., doktor tekhn. nauk. retsenzent; MASHKOV, A.N., kand. sel'khoz. nauk, retsenzent; ARKHANGEL'SKIY, N.A., prof., red.; BORISOVA, G.A., red.; GROMOV, A.S., tekhn. red.

[Leather goods, shoes, furs and pelts] Kozhevenno-obuvnye, pushno-mekhovye i ovchinno-shubnye tovary. Pod red. N.A.Arkhangel'skogo. Moskva, Gos. izd-vo torg. lit-ry, 1962. 536 p. (MIRA 15:3)

(Boots and shoes) (Fur) (Hides and skins)

VINOGRADOV, A. P.

Cupola-furnace operations. A. P. VINOGRADOV. *Domez* 1930, No. 3, 25-40.—Relations among compn. of top gas of the cupola furnace, consumption of fuel, loss of metal by burning and vol. of blast are discussed. In comparison with blast-furnace coke, normal metallurgical coke for cupola furnaces should be as strong mechanically, should contain less S and ash and should be less porous. German metallurgical coke contains an av. of 88% fixed C, while the Ukrainian coke contains only 80%. Formulas are given for finding normal consumption of coke of given compn. and given conditions of smelting; for detg. coke consumption for blowing-in the cupola, and relation between coke consumption in general and duration of operating period of cupola. On the basis of cupola melting data it is established that excessive economy in coke consumption and excessive increase in intensity of smelting with increase of coke consumption, both lead to excessive losses of metal due to burning. S. L. MADORSKY

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VINOGRADOV, A. P.

Determination of output of a bloomery. A. P. Vinogradov. *Domez* 1932, No. 9, 18-23. Calcns. are given of dimensions of bloomeries, in connection with rolling mills of given capacities. S. L. Madorsky

METALLURGICAL LITERATURE CLASSIFICATION

VINOGRADOV, Andrei Pavlovich, 1875-

Calibration of metal rolls. Khar'kov, Nauchno-tekhn. izd-vo Ukrainy, 1934. (Mic 53-174)
Collation of the original as determined from the film: 244 p.

Microfilm TS-5

VINOGRADOV, Andrei Pavlovich, 1875-

Groove designing of rollers. 2. izd. Leningrad, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1950. 344 p. (51-23597)

VINOGRADOV, A. P.

Author: Vinogradov, A. P.

Title: The calibration of rollers. (Kalibrovka prokatnykh valkov.)

City: Leningrad

Publisher: State Scientific and Technical Publication pertaining to the crude and chromium metallurgy

Date: 1950

Available: Library of Congress

Source: Monthly List of Russian Accessions, Vol. 4, No. 1, p. 28.

VINOGRADOV, A.P.

Device for boring cylindrical holes. Mashinostroitel' no.6:25 Je '60. (MIRA 13:8)
(Drilling and boring machinery)

VINOGRADOV, A.S.

The density hypothesis for Dirichlet L-series. Izv. AN SSSR. Ser. mat. 29 no.4:903-934 '65. (MIRA 18:9)

VINOGRADOV, A. S.

15

The liming and the phosphorite treatment of the podzol soils of the flax-producing zone. A. S. Vinogradov. *Len i Konoplya* 1930, No. 1, 26-31; *Khim. Referat. Zhur.* 1939, No. 6, 60-1.—Flax is sensitive to an increase of the acidity (and to Al^{+++}) as well as to a basic reaction and to an excess of Ca. The optimum pH for flax is 5.7-6.5. The toxic properties of Al^{+++} in the soil can be reduced by liming, phosphoritizing and the addn. of org. fertilizers. Clover planting on acid podzol soils is also impossible without liming. Bacterial diseases are produced in flax by excessive liming and deficiency of B. Phosphorite is preferable to superphosphate on acid podzol soils.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VINOGRADOV A.S.

CA

PROCESSES AND PROPERTIES INDEX

The use of gypsum and phosphogypsum for the fertilizing of clover. A. S. Vinogradov. *Len i Konoplya* 1939, No. 10-11, 30-41; *Chem. Zentr.* 1940, I, 2813-4.—Clover is fertilized best with gypsum and phosphogypsum in the first year early in the spring just after the melting of the snow and just as the clover begins to push through the soil. The first year fertilizing can also be done in the fall (Sept.-Oct.). In very dry years or in regions where rainfall is light, fertilizing the clover in the fall of the first year is very highly recommended. Surface fertilizing during later growth is much less effective; it must be done when the clover is not more than 10-12 cm. in height. In this case the fertilizer should be used when the plants are moist (early in the morning when the dew is on or after a rain). If fertilizer is not applied the first year of the clover's growth then it can be used the 2nd year. Fertilizing of sandy soils or acid soils with gypsum and phosphogypsum is ineffective without the addn. of lime.

M. G. Moore

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

VINOGRADOV, A.S., master; OSMINNIKOV, A.M., slesar'

Recommendations on the maintenance of the distribution panel board of the ChS1 electric locomotive. Elek. i tepl.tiaga no.8:36 Ag '63. (MIRA 16:9)

1. Depo Moskva-Sortirovochnaya.

(Czechoslovakia--Electric locomotives)

VINOGRADOV, A.S., dotsent; AVANESOVA, V.Ya (Kazan')

Primary cancer of the gallbladder. Kaz.med.zhur.no.3:83-84 My-Je'63. (MIRA 16:9)

(GALLBLADDER—CANCER)

BALYKOV, Vladimir Mikhaylovich; VINOGRADOV, Aleksandr Semenovich; GERSHENOVICH, Samuil Yefimovich; BOGUTSKIY, N.V., otv. red.; ABRAMOV, V.I., red. izd-va; LOMILINA, L.N., tekhn. red.

[K19 equipment complex for mechanization of coal recovery from thin steeply dipping beds] Kompleks oborudovaniia K19 dlia mekhanizatsii vyemki uglia iz tonkikh krutopadaiushchikh plastov. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1961. 135 p. (MIRA 14:9)

(Mining machinery)

VINOGRADOV, A.S., kand.tekhn.nauk

The PSN-1,0 silo loader. Biul.tekh.-ekon.inform.Gos.nauch.-issl.
inst.nauch.i tekh.inform. 18 no.1:58-59 Ja '65. (MIRA 18:4)

VINOGRADOV, A. [S.]

Flax

Obtaining high quality flax fiber. Kolkh. proizv., 12, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 195~~3~~2, Uncl.

[S.]
VINOGRADOV, A., agronom.

Flax. Nauka i pered. op. v sel'khoz. 18 no.2:73-74 F '58. (MIRA 11:3)
(Flax)

ZAUSHITZYN, V. Ye., kand. tekhn. nauk; VINOGRADOV, A.S., kand. tekhn. nauk; POGREBITSKIY, R.D., inzh.; MIN'KOVSKIY, V.F., inzh.; KISELEV, N.P., inzh.

The PSN-1 mounted loader for silage. Trakt. i sel'khozmash. no.2:26-28 F '65.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya (for Zaushitsyn, Vinogradov). 2. Gosudarstvennoye spetsial'noye konstruktorskoye byuro po sel'skokhozyaystvennym mashinam, g. Kiyev (for Pogrebitskiy, Min'kovskiy, Kiselev).

VINOGRADOV, A.S., inzh.

Investigating the drying process of grasses. Nauch. trudy VIESKH 4:58-87 '59. (MIRA 13:11)

(Grasses—Drying)

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